UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,826	02/08/2002	Juha Karunen	3502-1006	9556

466 7590 04/20/2005

YOUNG & THOMPSON
745 SOUTH 23RD STREET
2ND FLOOR
ARLINGTON, VA 22202

EXAMINER
HERNANDEZ, NELSON D

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/067,826	KARUNEN ET AL.	
	Examiner	Art Unit	
	Nelson D. Hernandez	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,5,7-9,12,13 and 15* is/are rejected.

7)☒ Claim(s) *2, 3, 6, 10, 11 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/7/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1**, **4**, **5**, **7-9**, **12**, **13** and **15** are rejected under 35 U.S.C. 103(a) as being unpatentable over McNeil, US Patent 6,800,452 B1 in view of Colbeth, US Patent 6,424,750 B1.

Regarding **claim 1**, McNeil discloses a method for measuring radiation from an object (test samples as discussed in col. 2, lines 56-67; col. 7, lines 53-67; col. 11, line 65 – col. 12, line 8) with a charge coupled device (Fig. 2B: 203) comprising a matrix of pixels arranged in rows and columns (Col. 11, lines 11-61; col. 20, line 49 – col. 21, line 5), in which method the radiation creates charges to the charge wells of the pixels (Col. 11, lines 11-61; col. 20, line 49 – col. 21, line 5), charges from a column of the pixels is shifted to a serial register (Col. 11, lines 11-61; col. 20, line 49 – col. 21, line 5), the charges in a serial register are shifted to an output charge well (Col. 11, lines 11-61; col. 20, line 49 – col. 21, line 5), the charge is measured from the output charge well and charges from at least two pixels are accumulated into the output charge well (Figs. 3A-3B teaches that the charges form the area 301 of the CCD are read out by binning the pixels of the area 301 as discussed in col. 11, lines 11-61; col. 20, line 49 – col. 21, line 5, thus, it is taught that at least two pixels are accumulated into the output charge well

of the CCD sensor of the camera 203 to produce the output result as shown in figs. 3A-3B). McNeil does not explicitly disclose that the pixels whose charges are accumulated are determined on the basis of the positions of said at least one defected pixel in the sensor.

However, Colbeth teaches an X-Ray imaging system that performs binning of analog pixel signals from a detector array (Fig. 2: 12 and fig. 3) by selectively summing, within the detector array, adjacent pixel charges on a row-by-row basis and selectively summing, within detector array readout circuits, the previously summed pixel charges (by rows) on a column-by-column basis, also teaches an array, or mapping, of defective pixel flags being used to identify defective pixels within the detector array, with such flags being added to, or inserted into, the incoming data stream for dynamic processing along with the incoming pixel data, wherein the charge of the pixels adjacent to the defective pixel is accumulated when interpolation is performed to correct said defected pixel based on the location of the defected pixel determined by the flag (Col. 4, line 49 – col. 5, line 44; col. 5, line 55 – col. 6, line 55; col. 8, line 66 – col. 9, line 46; col. 9, line 61 – col. 10, line 20).

Therefore taking the combined teaching of McNeil in view of Colbeth as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify McNeil by detecting the defective pixels in the sensor and accumulating the charges of the pixels adjacent to a detected defective pixel. The motivation to do so would help to correct the defective pixels by performing interpolation as suggested by Colbeth (Col. 9, line 61 – col. 10, line 20).

Regarding **claim 4**, the combined teaching of McNeil in view of Colbeth as applied to claim 1 teaches that the charges values of the output node are ignored, which are distorted y at least one defected pixel (Colbeth teaches that accumulate the charges of the non defective pixels to correct the defective pixel, thus, the charge of the defective pixel is ignored, see Col. 9, line 61 – col. 10, line 20). Grounds for rejecting claim 1, apply here.

Regarding **claim 5**, the combined teaching of McNeil in view of Colbeth as applied to claim 1 teaches that the pixels that are accumulated and measured include all pixels the of which not distorted by defected pixels in the readout process (Colbeth teaches that accumulate the charges of the non defective pixels and then uses that accumulated and measured data to correct the defective pixel, see Col. 9, line 61 – col. 10, line 20). Grounds for rejecting claim 1, apply here.

Regarding **claim 7**, the combined teaching of McNeil in view of Colbeth teaches the same as in claim 1. Therefore, grounds for rejecting claim 1, apply here.

Regarding **claim 8**, the combined teaching of McNeil in view of Colbeth teaches the same as in claim 1. Therefore, grounds for rejecting claim 1, apply here.

Regarding **claim 9**, McNeil discloses an arrangement for measuring radiation (Test samples as discussed in col. 2, lines 56-67; col. 7, lines 53-67; col. 11, line 65 – col. 12, line 8) comprising a charge coupled device (Fig. 2B: 203) with a matrix of charge wells ranged in rows and columns of pixels (Col. 11, lines 11-61; col. 20, line 49 – col. 21, line 5), the arrangement also comprising: a serial register for receiving charges from a column of the parallel register pixels (Col. 11, lines 11-61; col. 20, line

49 – col. 21, line 5), output well for receiving charges from the serial register (Col. 11, lines 11-61; col. 20, line 49 – col. 21, line 5), means for measuring the charge from the output well, and means for accumulating charges from at least two pixels (Figs. 3A-3B teaches that the charges form the area 301 of the CCD are read out by binning the pixels of the area 301 as discussed in col. 11, lines 11-61; col. 20, line 49 – col. 21, line 5, thus, it is taught that at least two pixels are accumulated into the output charge well of the CCD sensor of the camera 203 to produce the output result as shown in figs. 3A-3B). McNeil does not explicitly disclose that the pixels whose charges are accumulated are determined on the basis of the positions of said at least one defected pixel in the sensor.

However, Colbeth teaches an X-Ray imaging system that performs binning of analog pixel signals from a detector array (Fig. 2: 12 and fig. 3) by selectively summing, within the detector array, adjacent pixel charges on a row-by-row basis and selectively summing, within detector array readout circuits, the previously summed pixel charges (by rows) on a column-by-column basis, also teaches an array, or mapping, of defective pixel flags being used to identify defective pixels within the detector array, with such flags being added to, or inserted into, the incoming data stream for dynamic processing along with the incoming pixel data, wherein the charge of the pixels adjacent to the defective pixel is accumulated when interpolation is performed to correct said defected pixel based on the location of the defected pixel determined by the flag (Col. 4, line 49 – col. 5, line 44; col. 5, line 55 – col. 6, line 55; col. 8, line 66 – col. 9, line 46; col. 9, line 61 – col. 10, line 20).

Therefore taking the combined teaching of McNeil in view of Colbeth as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify McNeil by detecting the defective pixels in the sensor and accumulating the charges of the pixels adjacent to a detected defective pixel. The motivation to do so would help to correct the defective pixels by performing interpolation as suggested by Colbeth (Col. 9, line 61 – col. 10, line 20).

Regarding **claim 12**, the combined teaching of McNeil in view of Colbeth as applied to claim 9 teaches means for ignoring such charge values of the output node, which are distorted by at least one defected pixel (Colbeth teaches that accumulate the charges of the non defective pixels to correct the defective pixel, thus, the charge of the defective pixel is ignored, see Col. 9, line 61 – col. 10, line 20). Grounds for rejecting claim 9, apply here.

Regarding **claim 13**, the combined teaching of McNeil in view of Colbeth as applied to claim 9 teaches means for determining the groups of pixels that are selected to be accumulated and measured to include all pixels the charges of which are not distorted by defected pixels in the readout process (Colbeth teaches that accumulate the charges of the non defective pixels and then uses that accumulated and measured data to correct the defective pixel, see Col. 9, line 61 – col. 10, line 20). Grounds for rejecting claim 9, apply here.

Regarding **claim 15**, the combined teaching of McNeil in view of Colbeth teaches the same as in claim 9. Therefore, grounds for rejecting claim 9, apply here.

Allowable Subject Matter

3. **Claims 2**, **3**, **6**, **10**, **11** and **14** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter:

Regarding **claims 2** and **10**, the reasons for indication of allowable subject matter is because the prior art fails to teach or reasonably suggest that the charge value of the output node is read when charges of distorted value enter the charge well of the serial register, which is closest to the output node.

Regarding **claims 3** and **11**, the reasons for indication of allowable subject matter is because the prior art fails to teach or reasonably suggest that the charges from the serial register are shifted to the output node when charge from a defected pixel enters the pixel column of the parallel register, which is closest the serial register.

Regarding **claims 6** and **14**, the reasons for indication of allowable subject matter is because the prior art fails to teach or reasonably suggest that when any charges in a group of pixels within one rectangular area is distorted in the readout process by a defected pixel at least one subset group of pixels is formed wherein none of charges in the subset group of pixels within said rectangular area is distorted in the readout process by a defected pixel said subset group of pixels being accumulated as a super pixel.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (571) 272-7311. The examiner can normally be reached on 8:00 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nelson D. Hernandez
Examiner
Art Unit 2612

NDHH
April 12, 2005

WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600